IODICAL
1960
LIBRARY
JUL 11 1961
FISH & WILDLIFE SERVICE
Library
1960

INTERNATIONAL PACIFIC SALMON FISHERIES COMMISSION

APPOINTED UNDER A CONVENTION
BETWEEN CANADA AND THE UNITED STATES FOR THE
PROTECTION, PRESERVATION AND EXTENSION OF
THE SOCKEYE SALMON FISHERIES IN
THE FRASER RIVER SYSTEM

ANNUAL REPORT
1960

COMMISSIONERS

ARNIE J. SUOMELA	SENATOR THOMAS REID
MILO MOORE	A. J. WHITMORE
DeWITT GILBERT	F. D. MATHERS

NEW WESTMINSTER
CANADA
1961

INTERNATIONAL PACIFIC SALMON FISHERIES COMMISSION

MEMBERS
AND PERIOD OF SERVICE
SINCE THE INCEPTION OF THE COMMISSION
IN 1937

CANADA	
William A. Found	1937-1939
A. L. Hager	1937-1948
Senator Thomas Reid	1937-
A. J. Whitmore	1939-
Olof Hanson	1948-1952
H. R. MacMillan, C.B.E., D.Sc.	1952-1956
F. D. Mathers	1956-1960
W. R. Hourston	1960-

UNITED STATES	
Edward W. Allen	1937-1951 1957-1957
B. M. Brennan	1937-1942
Charles E. Jackson	1937-1946
Fred J. Foster	1943-1947
Milo Moore	1946-1949 1957-
Albert M. Day	1947-1954
Alvin Anderson	1949-1950
Robert J. Schoettler	1951-1957
Elton B. Jones	1951-1957
Arnie J. Suomela	1954-
DeWitt Gilbert	1957-

INTERNATIONAL PACIFIC SALMON FISHERIES COMMISSION

APPOINTED UNDER A CONVENTION
BETWEEN CANADA AND THE UNITED STATES FOR THE
PROTECTION, PRESERVATION AND EXTENSION OF
THE SOCKEYE SALMON FISHERIES IN
THE FRASER RIVER SYSTEM

ANNUAL REPORT
1960

COMMISSIONERS

ARNIE J. SUOMELA
MILO MOORE
DeWITT GILBERT
SENATOR THOMAS REID
A. J. WHITMORE
F. D. MATHERS
(January to August)
W. R. HOURSTON
(August to December)

DIRECTOR OF INVESTIGATIONS
LOYD A. ROYAL

NEW WESTMINSTER
CANADA
1961

REPORT OF THE
INTERNATIONAL PACIFIC SALMON FISHERIES COMMISSION
FOR THE YEAR 1960

Production of Fraser River sockeye has been increased substantially during the past decade because of the proper timing and increased size of racial escapements reproducing under fairly stable environmental conditions.

The 1960 sockeye run proved to be one of the best in the history of the cycle year. The catch of sockeye in 1959 was the best since 1903 for that cycle year and because of the tremendous size of the Adams River run in 1958, production in that year was the best in the entire history of this cycle. The record number of downstream migrant smolts observed in 1959 indicates that the 1961 run has the largest potential abundance since the run of 31,000,000 in 1913. However, the 1961 sockeye run may not realize the high potential indicated by this large downstream migration because of an expected low level of marine survival.

The following table illustrates the increases in the cyclical catch of Fraser River sockeye during recent years and particularly the benefits derived when favorable marine survival conditions prevail as was the case for the runs returning in both 1958 and 1959.

Cyclical Catch Records of Fraser River Sockeye

1958 Cycle Year	*1959 Cycle Year*
1958 — 14,779,000*	1959 — 3,393,000
1954 — 9,529,000	1955 — 2,115,000
1950 — 2,115,000	1951 — 2,425,000
1946 — 7,791,000	1947 — 443,000
1942 — 7,983,000	1943 — 591,000
1938 — 3,309,000	1939 — 1,124,000
1934 — 5,020,000	1935 — 1,441,000
1930 — 4,588,000	1931 — 1,434,000
1926 — 1,382,000	1927 — 1,783,000
1922 — 1,094,000	1923 — 857,000
1918 — 811,000	1919 — 1,249,000
1914 — 5,693,000	1915 — 1,825,000
1910 — 4,456,000	1911 — 2,179,000
1906 — 4,097,000	1907 — 1,722,000
1902 — 7,179,000	1903 — 4,253,000

* Includes 4,280,000 fish caught in Johnstone Strait

1960 Cycle Year	*1961 Cycle Year*
1960 — 2,454,000	1961 — ?
1956 — 1,802,000	1957 — 3,050,000
1952 — 2,268,000	1953 — 4,025,000
1948 — 1,842,000	1949 — 2,078,000
1944 — 1,439,000	1945 — 1,676,000
1940 — 1,687,000	1941 — 3,675,000
1936 — 2,579,000	1937 — 1,973,000
1932 — 1,587,000	1933 — 2,450,000
1928 — 942,000	1929 — 2,059,000
1924 — 1,214,000	1925 — 1,829,000
1920 — 1,209,000	1921 — 1,686,000
1916 — 1,286,000	1917 — 6,883,000
1912 — 3,363,000	1913 — 31,343,000
1908 — 2,750,000	1909 — 20,926,000
1904 — 2,399,000	1905 — 20,681,000

Although conditions for marine survival have varied radically during the past decade, a substantial freshwater production of young sockeye is now being maintained for each of the four cycle years. With a relatively large number of downstream migrants available to produce each cycle year run, those runs

having favorable marine conditions for survival will be of exceptional size while those runs not as fortunate will still be of good size. An example of the latter situation can be found in the size of the 1960 run. The marine survival of the downstream migrants which produced the 1960 run was only half that effective for the 1959 run yet the number of downstream migrants preceding the 1960 run was sufficiently great to provide an excellent adult catch.

Marine survival conditions for the 1961 run are expected to be very poor. However, the freshwater production was such that if the marine survival were similar to that recorded for either the 1958 or 1959 runs, the return in 1961 would equal or exceed that of any cycle year in history except 1913. Regardless of the expected small *relative* size of the 1961 sockeye run it should now be possible to maintain the high potential in freshwater reproduction for this cycle in future years and a record run only awaits a year of favorable marine survival.

It is important to emphasize that the establishment of a record catch for a cycle year, as a result of favorable marine survival, does not insure that this population size can be maintained for each returning cycle year. Adult population size can be expected to fluctuate within a range of 1 to 4 due solely to the variation in marine survival which has fluctuated from 5% to 20%, at least during recent years. A range of 1 to 4 in marine survival represents a drastic fluctuation and can have a tremendous impact on the economy of the fishery. A realistic example of the fluctuation in marine survival is best represented by the 1958 run of 19,000,000 fish. This run apparently experienced optimum survival conditions. Had marine survival conditions been adverse as they were in the case of the 1955 run the 1958 run could have been reduced to 5,000,000 fish.

COMMISSION MEETINGS

The International Pacific Salmon Fisheries Commission held seven formal meetings during 1960. The first meeting of the year was convened on January 19 with the Advisory Committee composed of the following members:

United States	*Canada*
J. Plancich Salmon Processors	Richard Nelson Salmon Processors
N. Mladinich Purse Seine Fishermen	Charles Clarke Purse Seine Fishermen
Joe Erisman Gill Net Fishermen	Peter Jenewein Gill Net Fishermen
John Brown Reef Net Fishermen	H. Stavenes Purse Seine Crew Members
Bert G. Johnston Troll Fishermen	Herbert North Troll Fishermen
Howard Gray Sport Fishermen	M. W. Black Sport Fishermen

The tentative recommendations for regulatory control of the sockeye and pink salmon fishery in Convention waters, as submitted to the Advisory Committee on December 11, 1959, were discussed and certain revisions made on the basis of the presentations by the Committee. The revised regulations recommended for the 1960 sockeye and pink salmon fishery in Convention waters were approved in part with the daily opening and closing times for Canadian purse seine and gill net fishing in Juan de Fuca Strait being held in abeyance subject to further recommendations by the Advisory Committee. The Commis-

sion reviewed the status of the proposed temporary experimental fry production station in the Upper Pitt River area and the proposed research station in the Cultus Lake area.

The Commission met with the Minister of Fisheries of Canada in Ottawa on February 26 to discuss the necessity of the proposed research field station. It was emphasized that there was an immediate need for information on the tolerance limits of Fraser River pink and sockeye salmon to possible changes in their freshwater environment and also for information related to the improvement of methods for successfully rehabilitating barren areas and for extending the fisheries of these two species. Reference was made to the need for defining as soon as practicable the responsibility of the Canadian Government in allowing escapement of Fraser River sockeye and pink salmon through the Johnstone Strait fishery and the responsibility of the Commission in allowing escapement of pink salmon to spawning areas not located in Convention waters.

A meeting on July 18 was held for the purpose of considering the progress of the sockeye salmon fishery and the possible regulatory problems involved in fulfilling the Commission's terms of reference.

A fourth meeting of the Commission was held on July 28 to again consider the progress of the sockeye fishery. Emergency recommendations were approved to obtain proper escapement and achieve the required division in the catch by the fishermen of the two countries.

On August 9 the Commission met to consider the progress of the sockeye fishery in each country and the status of the escapement. Regulatory changes were approved for submission to the governments concerned to obtain an equitable share of the catch by United States fishermen.

A field inspection of sockeye salmon spawning in Upper Pitt River was made by the Commission on September 14. Observations were made of egg taking and incubation operations in connection with the experimental fry production station just completed on 7 Mile Creek, tributary to the Upper Pitt River. The current status of the sockeye fishery was discussed and further regulatory measures recommended to fulfill the terms of reference of the Commission.

The final meeting of the year was held on December 15 and 16 with the first day devoted to general business. The appointment of Mr. R. H. Stanton of North Surrey, B.C., as the Canadian representative of the Troll fishermen on the Advisory Committee was unanimously approved to fill the vacancy created by the resignation of Mr. Herbert North. On December 16 the annual open meeting was held with the fishing industry at which time the various aspects of the 1960 fishing season, a summary of possible factors influencing the 1961 sockeye and pink salmon runs and the tentative proposals for regulations of these fisheries were presented for study by the Advisory Committee.

1960 REGULATIONS

Recommendations for regulations governing the 1960 sockeye and pink salmon fishery in United States Convention waters were adopted at a meeting of the Commission held with its Advisory Committee on January 19, 1960, and submitted to the Government of the United States and the State of Washington on March 4, 1960. Recommendations for regulations governing the 1960 sockeye and pink salmon fishery in Canadian Convention waters were adopted at a

meeting of the Commission held on January 19, 1960, and submitted to the Government of Canada on April 11, 1960. The recommendations for United States Convention waters were implemented by an Order of the Director of the Washington State Department of Fisheries on April 8, 1960, and for the Canadian Convention waters by the Government of Canada in an Order-in-Council dated May 12, 1960.

The recommendations of the Commission were as follows:

United States Convention Waters

"The International Pacific Salmon Fisheries Commission appointed pursuant to the Convention between Canada and the United States of America for the protection, preservation and extension of the Sockeye Salmon Fisheries in the Fraser River System, signed at Washington on the 26th day of May, 1930, as amended by the Pink Salmon Protocol signed at Ottawa on the 28th day of December, 1956, hereby recommends to the Director of Fisheries of the State of Washington that regulations to the following effect, in the interests of such fisheries, be adopted by him for the year 1960 by virtue of authority in him vested by Section 6 of Chapter 112 of the Laws of the State of Washington of 1949, namely:

In all of the Convention waters of the United States of America lying easterly of a straight line drawn from the lighthouse on Tatoosh Island in the State of Washington to Bonilla Point in the Province of British Columbia:

(a) Taking sockeye and/or pink salmon shall be prohibited from four o'clock in the forenoon of Sunday the 19th day of June, 1960, to four o'clock in the forenoon of Monday the 18th day of July, 1960, provided that nothing in this recommendation shall militate against the taking of sockeye and/or pink salmon by net fishing gear having mesh of not less than 8½ inch extension measure, if fishing by such net fishing gear is permitted by the State of Washington.

In the United States Convention waters of Juan de Fuca Strait lying westerly of a straight line drawn from Angeles Point in the State of Washington across Race Rocks to William Head in the Province of British Columbia:

(a) Taking sockeye and/or pink salmon by means of purse seine fishing gear shall be prohibited from eight o'clock in the afternoon of Wednesday of each week to four o'clock in the forenoon of the Monday following and from eight o'clock in the afternoon until four o'clock in the forenoon of the following day during such times as sockeye and/or pink salmon fishing by means of purse seine fishing gear is not otherwise prohibited and by means of gill net fishing gear from eight o'clock in the forenoon of Thursday of each week to six o'clock in the afternoon of the Monday following and from eight o'clock in the forenoon until six o'clock in the afternoon of each day during such times as sockeye and/or pink salmon fishing by gill net fishing gear is not otherwise prohibited between the 18th day of July, 1960, and the 6th day of August, 1960, both days inclusive.

(b) Taking sockeye and/or pink salmon shall be prohibited from the 7th day of August, 1960, to the 27th day of August, 1960, both days

inclusive, except by means of purse seine fishing gear from four o'clock in the forenoon to eight o'clock in the afternoon of Monday the 8th day of August, 1960, and Tuesday the 9th day of August, 1960, and by means of gill net fishing gear from six o'clock in the afternoon of Monday the 8th day of August, 1960, to eight o'clock in the forenoon of Tuesday the 9th day of August, 1960, and from six o'clock in the afternoon of Tuesday the 9th day of August, 1960, to eight o'clock in the forenoon of Wednesday the 10th day of August, 1960.

In the United States Convention waters lying easterly of a straight line drawn from Angeles Point in the State of Washington across Race Rocks to William Head in the Province of British Columbia:

(a) Taking sockeye and/or pink salmon by means of purse seine and reef net fishing gear shall be prohibited from eight o'clock in the afternoon of Thursday of each week to four o'clock in the forenoon of the Monday following and from eight o'clock in the afternoon until four o'clock in the forenoon of the following day during such times as sockeye and/or pink salmon fishing by means of purse seine and reef net fishing gear is not otherwise prohibited and by means of gill net fishing gear from eight o'clock in the forenoon of Friday of each week to six o'clock in the afternoon of the Monday following and from eight o'clock in the forenoon until six o'clock in the afternoon of each day during such times as sockeye and/or pink salmon fishing by gill net fishing gear is not otherwise prohibited between the 18th day of July, 1960, and the 13th day of August, 1960, both days inclusive.

(b) Taking sockeye and/or pink salmon shall be prohibited from Sunday the 14th day of August, 1960, to Sunday the 27th day of August, 1960, both days inclusive.

All times hereinbefore mentioned shall be Pacific Standard Time.

In making the above recommendations for regulatory control of sockeye and pink salmon fishing in United States Convention waters for the year 1960 the Commission recognizes the need for the continued maintenance of certain previously established closed areas by the Director of Fisheries of the State of Washington for the protection and preservation of other species of food fish."

Canadian Convention Waters

"The International Pacific Salmon Fisheries Commission appointed pursuant to the Convention between Canada and the United States of America for the protection, preservation and extension of the Sockeye Salmon Fisheries in the Fraser River System, signed at Washington on the 26th day of May, 1930, as amended by the Pink Salmon Protocol signed at Ottawa on the 28th day of December, 1956, hereby recommends that regulations to the following effect, in the interests of such fisheries, be adopted by Order-in-Council as amendments to the Special Fishery Regulations for British Columbia, for the season of 1960, under the authority of the Fisheries Act, namely:

1. (1) No person shall fish for sockeye or pink salmon in the waters of the southerly portion of District No. 3 embraced in Area 20 and that portion of Area 19 lying westerly of a straight line drawn across the Strait of Juan de Fuca joining William Head and Angeles Point through Race Rocks commencing

at the point of intersection with the international boundary line with purse seines:

(a) From the 20th day of June, 1960, to five o'clock in the forenoon of the 18th day of July, 1960, both dates inclusive;

(b) From the 18th day of July, 1960, to the 31st day of July, 1960, both dates inclusive, except from five o'clock in the forenoon to six o'clock in the afternoon of Monday, Tuesday and Wednesday in each week;

(c) From the 1st day of August, 1960, to the 7th day of August, 1960, both dates inclusive, except from half past five o'clock in the forenoon to six o'clock in the afternoon of Monday, August 1, Tuesday, August 2, and Wednesday, August 3; and

(d) From the 7th day of August, 1960, to six o'clock in the afternoon of August 28th, 1960, except from half past five o'clock in the forenoon to six o'clock in the afternoon of Monday, August 8th, and from half past five o'clock in the forenoon to six o'clock in the afternoon of Tuesday, August 9th.

(2) No person shall fish for sockeye or pink salmon in the waters of the southerly portion of District No. 3 embraced in Area 20 and that portion of Area 19 lying westerly of a straight line drawn across the Strait of Juan de Fuca joining William Head and Angeles Point through Race Rocks commencing at the point of intersection with the international boundary line with gill nets:

(a) From the 20th day of June, 1960, to six o'clock in the afternoon of the 17th day of July, 1960, both dates inclusive;

(b) From the 17th day of July, 1960, to the 30th day of July, 1960, both dates inclusive, except from

(i) six o'clock in the afternoon of Sunday to five o'clock in the forenoon of Monday;

(ii) six o'clock in the afternoon of Monday until five o'clock in the forenoon of Tuesday; and

(iii) six o'clock in the afternoon of Tuesday until five o'clock in the forenoon of Wednesday in each week;

(c) From the 31st day of July, 1960, to the 6th day of August, 1960, both dates inclusive, except from

(i) six o'clock in the afternoon of Sunday, July 31, to half past five o'clock in the forenoon of Monday, August 1;

(ii) six o'clock in the afternoon of Monday, August 1, until half past five o'clock in the forenoon of Tuesday, August 2; and

(iii) six o'clock in the afternoon of Tuesday, August 2, until half past five o'clock in the forenoon of Wednesday, August 3; and

(d) From the 7th day of August, 1960, to six o'clock in the afternoon of the 28th day of August, both dates inclusive, except from

(i) six o'clock in the afternoon of Sunday, August 7th, to half past five o'clock in the forenoon of Monday, August 8th;

(ii) six o'clock in the afternoon of Monday, August 8th, to half past five o'clock in the forenoon of Tuesday, August 9th.

2. No person shall fish for sockeye or pink salmon in the waters of the said southern portion of District No. 3 embraced in Areas 17 and 18 and that portion of Area 19 lying easterly of a straight line drawn across the Strait of Juan de Fuca joining William Head and Angeles Point through Race Rocks commencing at the point of intersection of the international boundary line and in the waters of District No. 1:

(a) By means of nets from the 27th day of June, 1960, to the 13th day of August, 1960, both dates inclusive, except from eight o'clock in the forenoon of Monday to eight o'clock in the forenoon of Thursday in each week.

(b) By means of nets from the 14th day of August, 1960, to the 2nd day of October, 1960, both dates inclusive, except from eight o'clock in the forenoon of Monday to eight o'clock in the forenoon of Wednesday in each week.

(c) Subsection 2 (b) above does not apply to sockeye or pink salmon taken in gill nets having mesh of not less than 9 inches extension measure for linen nets and 9½ inches extension measure for nylon nets on and after September 9th, 1960, where operation of gill nets having a mesh greater in size than the minimum measurement prescribed herein has been authorized for the taking of spring salmon by the Area Director of Fisheries for British Columbia pursuant to the provisions of British Columbia Fishery Regulations.

All times hereinbefore mentioned shall be Pacific Daylight Saving Time."

Emergency Amendments

In order to provide for adequate racial escapements and equal division of the season's catch by the Canadian and United States fishermen the approved regulations as detailed above were later amended on the recommendation of the International Pacific Salmon Fisheries Commission. A detailed list of the regulatory amendments is as follows:

July 28, 1960 — Because of the failure of the Chilko run of sockeye to appear in volume as scheduled and to provide for adequate escapement, fishing time was reduced by 24 hours, effective August 1, in Canadian Convention waters lying westerly of the Angeles Point-William Head line. Fishing time was reduced 48 hours effective August 1 and 2 in Canadian Convention waters lying easterly of the Angeles Point-William Head line.

August 4, 1960 — Because of the continued failure of the Chilko run of sockeye to appear in volume and to secure adequate escapement consistent with equitable distribution of the catch fishing time was reduced by 24 hours effective August 8 in Canadian Convention waters lying easterly of the Angeles Point-William Head line. Fishing time was increased 24 hours for United States fishermen effective August 7.

August 9, 1960 — A substantial increase in the volume of Chilko sockeye appearing in the fishery necessitated a readjustment of regulations as follows:

a. Restoration of 24 hours fishing time in Canadian Convention waters lying easterly of the Angeles Point-William Head line effective August 11.

b. The addition of 24 hours fishing time in Canadian Convention waters lying westerly of the Angeles Point-William Head line effective August 10.

c. The addition of 24 hours fishing time for United States fishermen effective August 12.

August 16, 1960 — To assist in securing equalization of the sockeye catch between the fishermen of the two countries, fishing time was increased 24 hours, effective August 18, in Canadian Convention waters lying easterly of the Angeles Point-William Head line.

August 25, 1960 — To provide for increased escapements of the late migrating and delaying sockeye populations the weekly closed season commencing at 8:00 a.m. August 24 was extended to 8:00 a.m. September 5 in Canadian Convention waters lying easterly of the Angeles Point-William Head line. Fishing by large mesh nets was permitted by the Department of Fisheries in those waters of the Fraser River lying inside, i.e. easterly of a straight line drawn from Point Grey to North Arm Jetty, thence to Sand Heads Light, thence to Canoe Pass Buoy, thence in a straight line projected through West Point Roberts Light to the International Boundary, otherwise known as the "Blue Line", from 8:00 a.m. to 8:00 p.m. daily on August 31 and September 1 in order to harvest available spring salmon. Regulatory control of United States Convention waters was relinquished effective August 28 and of Canadian Convention waters lying westerly of the Angeles Point-William Head line effective August 27.

August 30, 1960 — To further provide for proper escapement of late migrating races of sockeye the weekly closed season in Canadian Convention waters lying easterly of the Angeles Point-William Head line scheduled to end at 8:00 a.m. September 5 was extended to 8:00 a.m. September 12.

September 7, 1960 — The small size of the late and delaying runs of sockeye necessitated a further extension of the closed season to 8:00 a.m. September 20 in Canadian Convention waters lying easterly of the Angeles Point-William Head line except that fishing was permitted in those waters of the Fraser River lying inside the "Blue Line" for 48 hours commencing at 8:00 a.m. September 12.

September 15, 1960 — In the further interest of conservation the closed season in the Canadian Convention waters lying easterly of the Angeles Point-William Head line was extended to 8:00 a.m. September 26 except that fishing with large mesh nets was permitted by the Department of Fisheries for 24 hours effective at 8:00 a.m. September 21 for those waters lying inside the "Blue Line". Regulatory control was relinquished by the Commission for those Canadian Convention waters lying easterly of the Angeles Point-William Head line effective 8:00 a.m. September 26.

SOCKEYE SALMON REPORT

The Fishery

The major fluctuations in the characteristics of the Fraser River sockeye populations during the past decade continued to be evident in 1960. The sockeye were the smallest in the history of the cycle year at least since 1916; the four-year-old fish averaging only 5.19 pounds as compared with the cycle year average of 6.00 pounds. In the 1952 cycle year the sockeye of four years of age averaged 6.8 pounds which represented the heaviest fish recorded for this cycle year.

Whenever the sockeye run consists of fish below average in size the efficiency of the United States gill nets drop significantly. In 1956 when the average weight was 6.02 pounds the gill nets caught 41.0 per cent of the total United States catch. With the average weight dropping to 5.19 pounds in 1960 the percentage of sockeye taken by the gill net fishermen dropped to 21.12 per cent of the total United States catch. In 1957 and again in 1959 when the average weight of the fish dropped below 5.5 pounds the percentage of the United States catch taken by gill net fishermen dropped significantly.

Cyclical Average Weights of Four-Year-Old Fraser River Sockeye

Cycle Year	*Average Weight Pounds*	*Cycle Year*	*Average Weight Pounds*	*Cycle Year*	*Average Weight Pounds*
1916	5.86	1932	6.45	1948	5.53
1920	6.02	1936	6.47	1952	6.80
1924	5.60	1940	6.35	1956	6.02
1928	6.38	1944	6.23	1960	5.19

Following a pattern of delay in the spawning migration which started in 1957 the sockeye run was eight days later than anticipated. Such a significant variation in the timing of the run creates a serious problem in management. If the run is early and of small size it is very difficult to prevent overfishing since the peak of the run must pass before the timing and size of the run is accurately established. A difficult situation also prevails if the run is late, for there is a tendency under this circumstance to underestimate the size of the run.

During the past season when the fish failed to appear at the time they were anticipated, special closures were provided, particularly in the Fraser River area, to guarantee an adequate escapement in case the run was below the expected size. Fortunately, while the run was late it approached the expected

size and later readjustment in the regulations was possible to provide the normally expected distribution of the season's catch by individual fishing areas.

The total catch of 2,454,164 sockeye was the second largest for the cycle year since 1912, the year before the major Hell's Gate slide. United States fishermen harvested 1,198,969 fish or 48.85 per cent of the total. Canadian fishermen caught 1,255,195 fish or 51.15 per cent of the total. There was no discernable evidence of increased efficiency on the part of the United States fishing fleet although the largest catch for any single day in the cycle year history since 1912 was recorded on both August 7 and 8.

The proportion of the Canadian catch taken in Juan de Fuca Strait increased in spite of the fact that total fishing time in this area was reduced from the 55 days allowed in the preceding cycle year to 18 days. Some of the increased catch in the Strait was caused by an increase in the operating units of both purse seines and gill nets but there remains the possibility of increased fishing efficiency, particularly on the part of the gill net fishery, over that recorded in 1956.

Cycle Year	*Per cent of Canadian Catch Taken in Juan de Fuca Strait*	*Per cent of Canadian Catch Taken by Purse Seines in Juan de Fuca Strait**	*Per cent of Canadian Catch Taken by Gill Nets in Juan de Fuca Strait**
1960	43.45	27.90	15.34
1956	34.70	24.18	10.47
1952	16.05	10.39	0.00
1948	11.83	1.93	0.00
1944	2.92	0.00	0.00

* Troll catches not listed.

A complete statistical record of the 1960 sockeye catch compared with that for previous cycle years in both United States and Canadian Convention waters may be found in Tables I to IV inclusive.

Escapement

The net escapement from the commercial and Indian fisheries as measured on the spawning grounds (Table VI) was 19.47 per cent of the total 1960 run of 3,184,418 sockeye. The total of 619,970 spawners is considerably below the number recorded in the preceding cycle year but most of the reduction in the number of spawners occurred in the escapement to Chilko River. While the number of spawners required to produce a maximum run to the Chilko area in the dominant year is not known precisely the most optimum number appears to be between 400,000 and 500,000. On the basis of current knowledge it may be stated that excessive escapement occurred to Chilko River in the brood year of 1956 and the substantial reduction in the 1960 escapement to this area is considered desirable in the interest of good management.

Test fishing proved to be an exceedingly valuable tool for measuring the gross escapement at the upper limits of commerial fishing at Mission, British Columbia. On the basis of test fishing the estimated *gross* escapement (including catch by Indians) for the 1960 Chilko population was 533,742 sockeye as compared with the actual figure of 483,806; a positive difference of 10.32 per

cent. Field observations by a number of observers including upriver fishermen resulted in an estimated escapement greater than that indicated by test fishing and considerably greater than the number of fish actually obtained. The reliance on test fishing results as opposed to those based on field observations, obviously prevented serious overfishing of the run.

The racial breakdown of the 1960 catch for individual populations other than Chilko River is not yet complete but it appears that the minor mid-season runs were overfished since they were subjected to the same fishery that operated on the dominant Chilko run. It is impossible to harvest properly the large and economically important Chilko run and at the same time give individual consideration to the smaller runs entering the fishery at the same time. Races migrating in mid-season which appear to have been overfished include those destined for Big Silver Creek in the Harrison Lake system, Gates Creek and the Raft River. Other small mid-season populations were subjected also to the same heavy fishing but escapements of these races were equal to or better than those of the brood year; these include the populations destined for Seymour River, Horsefly River, Stellako River and the Lake Stuart spawning areas.

Sockeye populations migrating early in the season and protected by the fishing closure effective until July 18 in all Convention waters except the Fraser River and the Gulf area received increased escapements over those recorded in the brood year. Populations in the above category include those destined for the Early Stuart spawning areas, Bowron River and Nadina River. However, in the case of the escapement of Early Stuart sockeye only 14,572 out of an estimated total escapement of 38,400 fish reached the spawning grounds. Sockeye of the Early Stuart population having advanced spawning coloration were reported by Inspectors of the Canada Department of Fisheries both near Quesnel, B.C. and Fort St. James at the outlet of Stuart Lake. A total of 150 dead unspawned sockeye were observed by the Commission staff on Stuart and Trembleur Lakes; these fish had obviously been delayed at some point en route and as a result had been unable to reach their spawning grounds.

The failure of all of the 1960 escapement of Early Stuart sockeye to reach their spawning grounds indicates a similar but less exaggerated situation than was reported in 1955. In the latter year only 2,170 sockeye in poor condition arrived on their spawning grounds out of an estimated escapement of over 30,000 fish. The obstruction in the migration located near Yale, B.C. was caused by a delayed spring runoff in the Fraser River and was immediately corrected by the construction of what are now known as the Yale Fishways.

With a recurrence of a delayed spring runoff in the Fraser River in 1960 observations were made during the passage of the Early Stuart run at the Yale Fishways and the fish were found to be moving through the fishways with no evidence of an accumulation similar to that which occurred in 1955 at the same location and under similar flow conditions. It is apparent there are other points of difficult passage for migrating sockeye in the Fraser River during delayed peak flood conditions. Flood conditions during the sockeye migration have only occurred during modern times in the years 1933, 1955 and 1960 but in spite of the construction of the Yale Fishways the problem of adequately

passing Early Stuart sockeye to their spawning grounds remains unsolved; furthermore it will be impossible to define and provide a proper solution in time for the large early run destined for the Stuart area in 1961. Studies of the problems are underway preparatory to presenting the governments with a complete report including positive corrective measures. The infrequent occurrence of block and delay conditions during the upstream migration of the Early Stuart escapement makes it improbable that these adverse conditions will recur twice in consecutive years. Such a situation would cause a very serious setback to a run which has now reached a size in the dominant year that is apparently larger than any previous runs dating back to 1820. It is obvious from the large size of the current dominant run to the Early Stuart spawning areas that Hell's Gate and other points of difficult passage have always been effective in periodically delaying or blocking these fish even before the slide in 1913.

The escapement to the Upper Pitt River was not satisfactory although this run received some additional protection through the delay in opening the fishery in all Convention waters except the Fraser River and the Gulf area. The escapement to Birkenhead River likewise was unsatisfactory, although this run received extra protection through additional closures of the fishery in late August in all Convention waters including the Fraser River.

The sockeye runs to both the Pitt and Birkenhead Rivers have shown a continuing decline in abundance, the possible cause being discussed in the 1959 Annual Report. In 1960 the maximum regulatory restrictions consistent with proper management of the fishery on other races of sockeye proved insufficient to provide for adequate spawning escapements to these two important areas. Further regulation of the fishery than that already being applied during the passage of the Pitt and Birkenhead runs would interfere with a proper harvest of more populous races migrating at approximately the same time.

During 1960 the Commission started and completed an experimental fish cultural station on Upper Pitt River which is designed to increase fry production and thus raise the reproductive rate of this population to a level competitive with other races migrating at the same time. All of the 3,257,000 eggs taken for incubation at the station were obtained from fish destined to spawn in side channels which later dried up during the winter low water period. Possible artificial methods for increasing fry production in the Birkenhead River are being studied in order that early action in solving the problem of declining runs in this area can be taken by the Commission.

Late migrating sockeye runs destined for lower river tributaries and also Adams River were protected by drastic closures in all Convention waters to allow for increased escapements. In spite of the lengthy closures during the fall fishery the escapements to Adams River and Weaver Creek were below those of the brood year while the spawning grounds in the Harrison River and Cultus Lake received only nominal increases.

In general the total escapement for 1960 is considered satisfactory in relation to its potential for producing a maximum run in the return cycle year. The declines in the escapements to the Early Stuart spawning area and to the

Birkenhead and Pitt Rivers must be prevented by new procedures since further restrictions of the fishery for this purpose are impractical.

Rehabilitation of Barren Areas

The sensitivity of Fraser River sockeye to their reproductive environment has been amply illustrated in the history of artificial propagation and transplantation. Hatcheries on the Fraser River were closed by the Federal Government in 1937 because they had been proven to be economically unsound where they were competitive with natural spawning areas. Many attempts had been made to transplant runs from one area to another but there was no recorded instance of a run being transplanted that was capable of maintaining itself by natural propagation.

Efforts of the Commission to transplant runs by the transfer of fingerling sockeye have also proven to be of little value. Only eyed egg transplants from donor streams having the same environmental cycle and located the same distance from the sea have proven to be of value. Runs of sockeye have now been established by eyed egg transfers in Portage Creek, Upper Adams River, Barriere River, and Middle Shuswap River. The number of adult fish returning in most instances have been disappointingly small because the number of eggs available for transfer from the donor stream has been limited. With the rapid increase in the size of spawning runs to the donor streams during recent years, especially to the Seymour River, the size of the eyed egg transplants can now be substantially increased in the hopes that increases can be obtained in the number of adult fish returning to the recipient stream.

Occasional failures continue to occur in attempted transplantations. Only very few individuals returned to Upper Adams River in 1960 from a planting of 253,000 eyed eggs originating from the Seymour population. No sockeye returned to a tributary of Nadina Lake from a planting of 318,000 eyed eggs that originated from Forfar Creek, a tributary of Middle River in the Stuart Lake system. A total of 23 sockeye returned to the Barriere River from a planting of 316,000 eyed eggs originating from Raft River. An effort is now being made to increase the size of all transfers to a minimum of 1,000,000 eggs up to a maximum of 3,000,000 whenever the donor stocks will permit such a transfer without seriously impairing the native spawning population.

The straying of returning adults originating from eyed egg transplants became a possibility on the basis of evidence collected in 1960. Helicopter surveys of the North Thompson River by personnel of the Fraser River Basin Board revealed sockeye spawning at several locations in the North Thompson River between Kamloops and the Raft River. Several hundred spawning sockeye were located just above the confluence of Boulder Creek and over 80 fish were located near Chu Chua below Little Fort, B.C. Spawning sockeye in the North Thompson River have never been observed previously by Commission observers nor have they been reported by local residents. An additional phenomenon was the occurrence of several hundred fish, possibly as many as a thousand in the Momich River, tributary of Adams Lake and having its confluence about six miles downlake from the confluence of Upper Adams River.

No early run of sockeye had ever been observed in the Momich River by the Commission staff in earlier years nor had any been reported by local transients. The fish in 1960 were observed by a Provincial game warden but unfortunately the report of his observation reached the Commission too late for a fruitful investigation. However the fish in the Momich River spawned at the same time as the few fish returning to Upper Adams River from a transfer of eyed eggs from Seymour River and also at the same time as the native run to Seymour River. Whether the sockeye observed spawning in the North Thompson and Momich Rivers were the result of straying of transplanted stocks to the Barriere and Upper Adams River respectively or the end result in each case of a few previously unobserved spawners will be difficult if not impossible to determine.

Eyed Egg Transfers — 1960

Donor Area	*Area Planted*	*Number of Eggs*
Raft River	Barriere River	1,083,000
Taseko Lake	Upper Adams River	702,000

Successful experiments conducted at the Quesnel Field Station for improving the quality of artificially propagated sockeye fry, as described in detail in the 1956 Annual Report, provided justification for the Commission building an experimental hatchery on the Upper Pitt River (Figure 1). The purpose of the hatchery is to increase fry production from this unstable spawning stream to a point where the natural rearing capacity of Pitt Lake can be utilized and thus produce a run of sockeye capable of withstanding standard fishing pressure without declining in abundance.

A total of 3,257,000 eggs were taken from the 1960 Pitt River run and incubated in the newly completed station. All of the eggs with the exception of 150,000 were taken from sockeye spawning in side channels of the main river which subsequently went dry during the cold winter months. The fertilized eggs were incubated in complete darkness which is the case in natural spawning. When the resulting alevins approach the fry stage they will be removed to troughs where they can become adjusted gradually to normal daylight. The upper half of each 'release' trough will be covered so the young fish can seek either a darkened or lighted area as the process of normal light adjustment develops. When the fry are ready to migrate to Pitt Lake they can leave the release trough at their own selected time. The experiment, if successful, should provide an improved method for transplanting sockeye runs to barren areas and a *limited* substitute for lost spawning grounds. A successful operation would also provide a method for increasing the production of sockeye salmon fry where the natural spawning area is too limited for the capacity of the related lake rearing area.

The construction of a stream type artificial spawning channel, 3000 feet in length and 20 feet in width, was started in 1960 adjacent to Seton Creek. The channel, designed for a water flow of 40 cubic feet per second, will be completed in time for the 1961 pink salmon runs and has a spawning capacity for at least 10,000 fish. Although the project is considered a full scale experiment for

FIGURE 1—Upper Pitt River experimental hatchery built and placed in operation in 1960.

FIGURE 2—The artificial spawning channel being built on Seton Creek to substitute for pink salmon spawning area lost by flooding from the Seton Creek hydroelectric diversion dam.

improving this type of facility it will also serve as a substitute for 2500 lineal feet of highly productive natural spawning grounds flooded out by the Seton Creek hydroelectric project. Silt free water from the same source that supports Seton Creek will be used to supply the channel and initially an average flow velocity of 1.5 feet per second will be maintained over 16 inches of gravel by the construction of boulder drop structures having a head differential of 12 inches. The gravel used in the project was graded to a diameter range of 0.5 to 4.0 inches.

PINK SALMON REPORT

Since the ratification of the Pink Salmon Protocol on July 3, 1957, it has been evident that the management of this species in the Convention area poses certain inherent problems which do not arise in the management of the Fraser River sockeye fishery. Practically all sockeye passing through Convention waters are of Fraser River origin. In contrast, while Fraser River pink salmon predominate in Convention waters, important segments of the run are destined to spawn in adjacent rivers located outside of Convention waters in the State of Washington and in British Columbia. Thus regulation of the pink salmon fisheries in Convention waters can affect the stocks spawning in these adjacent waters and these regulations are rightly of concern to neighbouring management agencies. This situation was recognized in Article VI of the Pink Salmon Protocol which requires that "The parties shall conduct a coordinated investigation of pink salmon stocks which enter Convention waters for the purpose of determining the migratory movement of such stocks." The ensuing large-scale coordinated tagging and escapement enumeration program* of 1959 extending from Admiralty Inlet and Salmon Banks to Johnstone Strait was designed to furnish the information required to solve the inherent management problems in a rational manner.

Although the joint analysis of the great quantity of data arising out of the cooperative 1959 program has not yet been completed, the urgency of the management problems has prompted those responsible to make some preliminary analyses of data presently available from this program. These preliminary analyses, while not precise or complete, serve to illustrate the general migration paths and distribution of the pink salmon passing through Johnstone and Juan de Fuca Straits as well as their approximate relative abundance in the various fisheries operating in 1959.

Figure 3 illustrates the spawning ground recoveries of fish tagged in Johnstone Strait. The percentages shown are directly related to the total escapement and are not adjusted for variable fishing mortality but they do serve to indicate that a significant number of Fraser River pink salmon approach the Fraser River by the northern route and very few of the Johnstone Strait fish are destined for the spawning streams located in the State of Washington. The dates of tagging of the tagged fish recovered indicated that practically all pink salmon passing through the Johnstone Strait fishery prior to the third week of August were destined for Canadian streams north of the Fraser River.

* The 1959 pink salmon program was organized and conducted under the jurisdiction of the Pink Salmon Coordinating Committee and its technical assistants. Membership in this committee consist of representatives of the Washington Department of Fisheries, the Canada Department of Fisheries, the Fisheries Research Board of Canada and the International Pacific Salmon Fisheries Commission.

FIGURE 3—Stream recoveries from the 1959 tagging in Johnstone Strait expressed as percentages of the total stream recoveries.

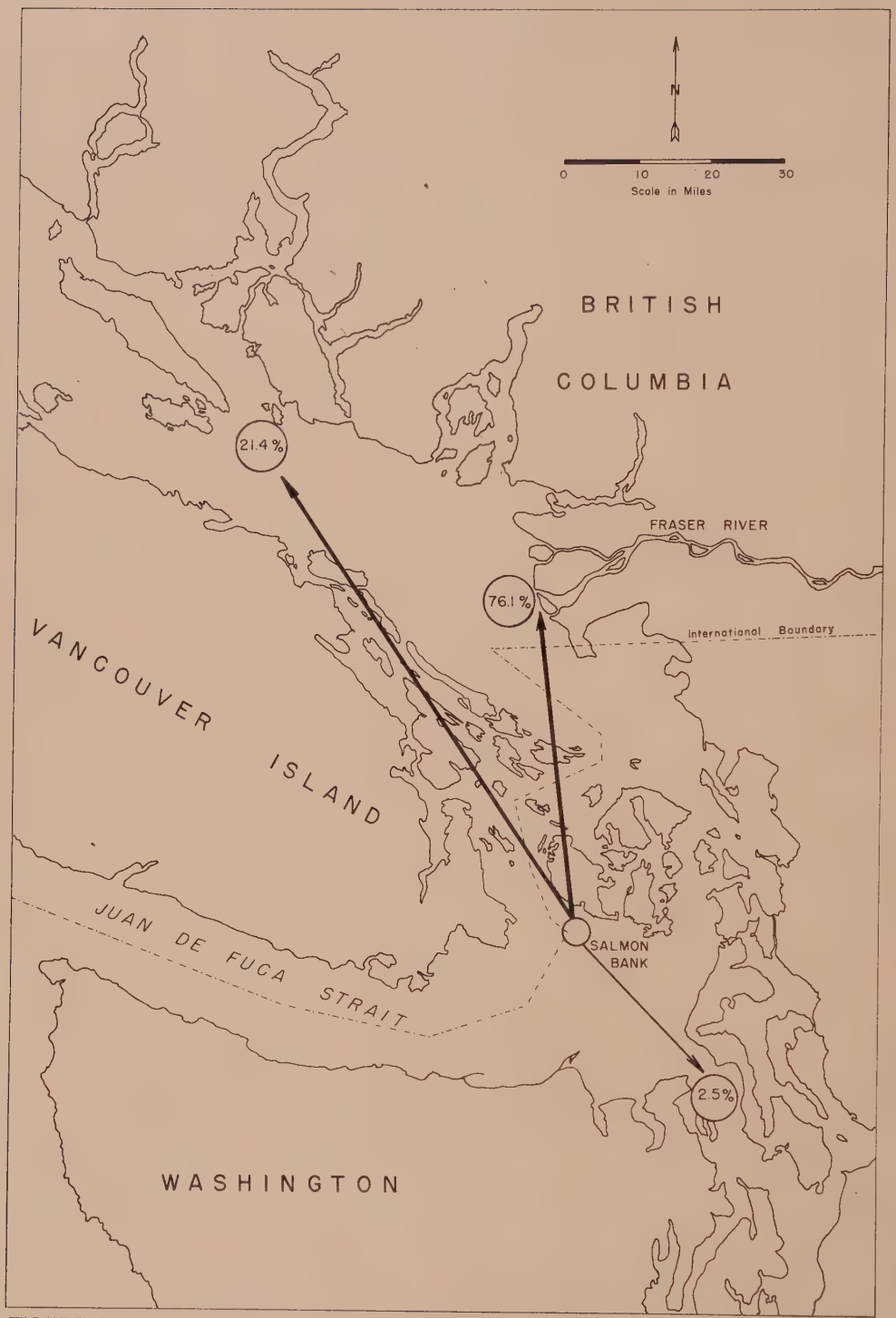

FIGURE 4—Stream recoveries from the 1959 tagging at Salmon Banks expressed as percentages of the total stream recoveries.

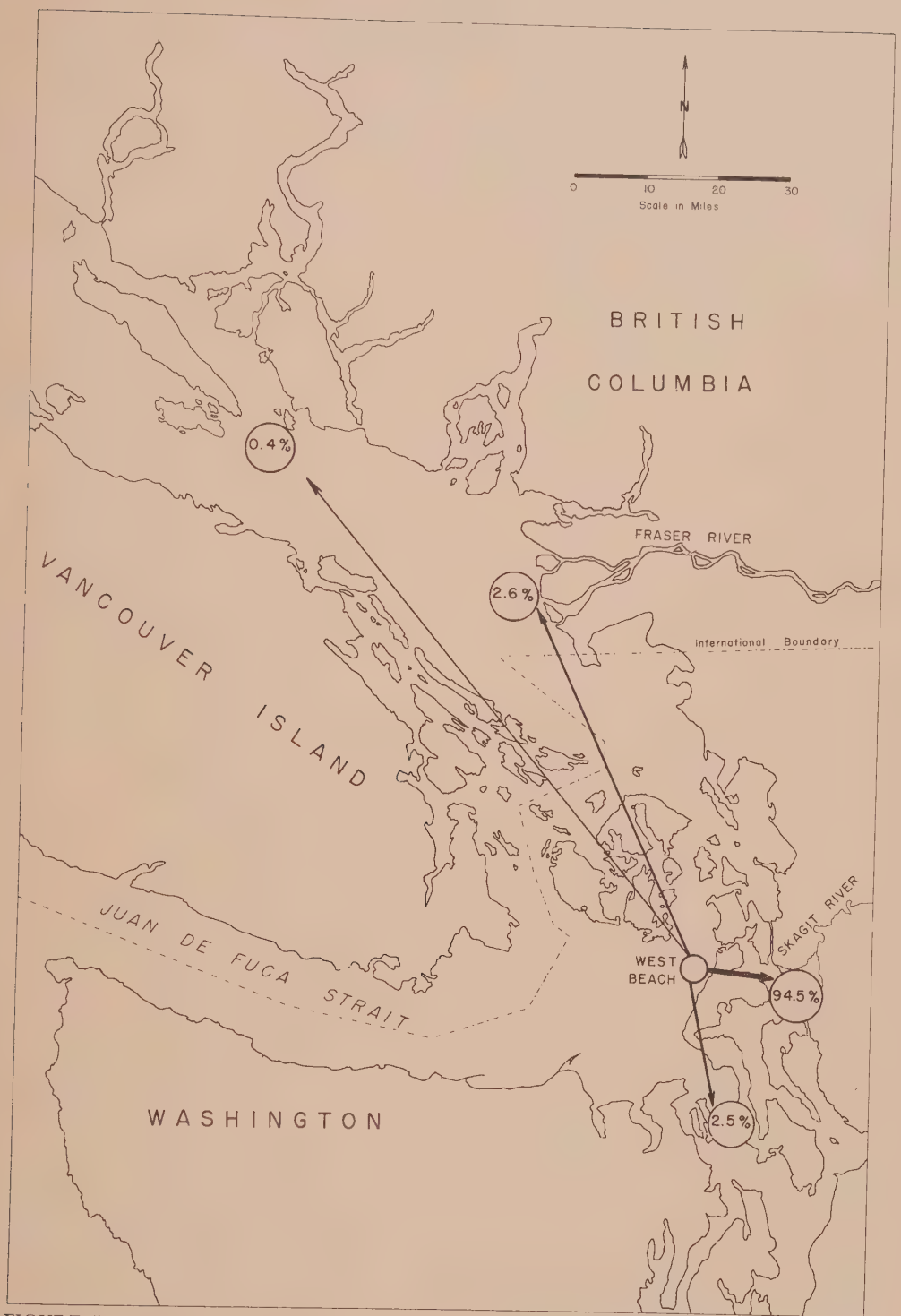

FIGURE 5—Stream recoveries from the 1959 tagging at West Beach expressed as percentages of the total stream recoveries.

In the last week of August these stocks were mixed with large numbers of Fraser-bound fish while in September the run was made up almost exclusively of Fraser fish. Numerous recoveries of Johnstone Strait tags at Point Roberts in September indicated that Fraser River pink salmon arriving by the northern approach periodically drift into United States fishing waters prior to their entrance into the Fraser River. It is important to note that this escapement of fish from Johnstone Strait is fully available to the Fraser River gill net fishery.

Pink salmon approaching Juan de Fuca Strait are harvested to a rapidly increasing extent by a sizable United States and Canadian troll fleet operating principally outside the entrance of the Strait. Upon entering the Strait the majority of the pink salmon apparently follow the Canadian shoreline where an important Canadian net fishery operates near the entrance to the Strait and to some extent further inside in the vicinity of Sooke. The Salmon Bank district is the first major net fishing area for pink salmon in United States Convention waters.

Tagging in the Salmon Banks area (Figure 4) reveals that this major United States fishery as well as all major United States fisheries to the north operate almost exclusively on pink salmon destined for Canadian streams. Only a small number of the fish tagged at Salmon Banks were recovered in the fishing areas and spawning streams in the non-Convention waters of the State of Washington. However, it should be noted that the early migrating run to the Nooksack River was not tagged but is logically available to all the United States fishing areas except for the Point Roberts fishery.

Tagging in the West Beach area (Figure 5) indicates that the pink salmon available to this fishery are destined primarily for the Skagit River in the State of Washington and to a lesser extent for Canadian streams including the Fraser River.

It would appear, therefore, that pink salmon originating in streams of the State of Washington, with the exception of the Nooksack River and Skagit River, are not subject to a very intensive net fishery in Convention waters by United States fishermen; the only important net fishery on these stocks being the Canadian fishery in Juan de Fuca Strait. In the case of pink salmon entering Juan de Fuca Strait and destined for Canadian streams, including the Fraser River, these fish are available to all the major United States fisheries in Convention waters.

Combining the information analyzed to date it is estimated that the total 1959 pink salmon run entering by way of Juan de Fuca Strait was approximately 6,531,000 fish. Of these an estimated 1,142,000 or 17 per cent were of Washington State origin. Fraser River fish amounted to an estimated 4,725,000 or 73 per cent. The balance of 664,000 fish or 10 per cent of the total was destined for non-Fraser Canadian streams. Further analysis of the combined data, including the catch in the various fishing areas, is given in the following table which records the estimated fishing mortality and escapement in per cent for the runs destined to each of the three major areas for the years 1957 and 1959. It is emphasized that the figures listed are preliminary and subject to further refinement by the technical staffs of the agencies involved in the joint program.

Calculated Catches and Escapements of Major Pink Salmon Runs Entering Juan de Fuca Strait in 1957 and 1959
(All figures in per cent of total for each run.)

Area	Washington		Fraser River*		Canadian Non-Fraser*	
	1957	1959	1957	1959	1957	1959
Canadian West Coast Convention Waters	20.8%	19.7%	21.1%	31.6%	17.3%	10.0%**
United States Convention Waters	11.7	12.7	39.4	42.8	29.0	38.5
Canadian Fraser River Catch	—	—	10.9	8.5	—	—
Non-Convention Catch Canada	—	—	—	—	2.4	9.3
Non-Convention Catch United States	25.3	16.7	—	—	—	—
Escapement	42.2	50.9	28.6	17.1	51.3	42.2
Total	100.0	100.0	100.0	100.0	100.0	100.0

* The figures listed do not include catches or escapements of fish entering Convention waters from Johnstone Strait.

** Strike of Canadian fishermen prevailed during part of run.

1960 PUBLICATIONS

1. Annual Report of the International Pacific Salmon Fisheries Commission for 1959.

2. Progress Report Number 7.
Migratory Behavior of Adult Fraser River Sockeye, by Philip Gilhousen.

3. Research Bulletin Number XI.
Sockeye and Pink Salmon Production in Relation to Proposed Dams in the Fraser River System, by F. J. Andrew and G. H. Geen.

TABLE I
SOCKEYE CATCH BY GEAR

United States Convention Waters

Year	Purse Seines			Gill Nets			Reef Nets			Total Catch
	Units	Catch	Percentage	Units	Catch	Percentage	Units	Catch	Percentage	
1960	199	843,850	70.38	422	253,211	21.12	63	100,915	8.42	1,198,969
1956	164	428,562	47.26	491	371,729	40.99	85	106,581	11.75	906,872
1952	207	826,304	74.21	195	175,064	15.72	66	112,107	10.07	1,113,475
1948	185	940,415	86.35	130	70,991	6.52	71	77,685	7.13	1,089,091

Canadian Convention Waters

Year	Purse Seines			Gill Nets			Traps			Total Catch
	Units	Catch	Percentage	Units	Catch	Percentage	Units	Catch	Percentage	
1960	77	353,482	28.16	1,466	898,826	71.61	0	0	0	1,255,195
1956	50	216,388	24.18	1,151	678,074	75.78	0	0	0	894,836
1952	41	122,114	10.58	1,470	966,852	83.75	5	65,417	5.67	1,154,383
1948	14	14,511	1.93	1,067	663,635	88.17	5	74,545	9.90	752,691

NOTE: Gear counts represent the maximum number of units delivering sockeye on any single day.
Unlisted troll catches of sockeye included in figures for total catch.

TABLE II
CYCLIC LANDINGS AND PACKS OF SOCKEYE FROM CONVENTION WATERS

	United States	*Canada*	*Total*
1960			
Total Landings (No. Sockeye)	1,198,969	1,255,195	2,454,164
Share in Fish	48.85%	51.15%	
Total Pack (48 Lb. Cases)	96,627	98,795	195,422
Share in Pack	49.45%	50.55%	
1956			
Total Landings (No. Sockeye)	906,872	894,836	1,801,708
Share in Fish	50.33%	49.67%	
Total Pack (48 Lb. Cases)	84,052	84,296	168,348
Share in Pack	49.93%	50.07%	
1946-1960			
Total Landings (No. Sockeye)	27,965,041	27,862,915	55,827,956
Share in Fish	50.09%	49.91%	
Total Pack (48 Lb. Cases)	2,458,187	2,417,185	4,875,372
Share in Pack	50.42%	49.58%	
1960 *Cycle Catch*			
1960	1,198,969	1,255,195	2,454,164
1956	906,872	894,836	1,801,708
1952	1,113,475	1,154,383	2,267,858
1948	1,089,091	752,691	1,841,782
1944	435,443	1,003,826	1,439,269
1940	654,091	1,033,000	1,687,091
1936	453,025	2,126,074	2,579,099
1932	853,406	733,735	1,587,141
1928	630,457	311,226	941,683
1924	772,056	442,250	1,214,306
1920	677,690	532,039	1,209,729
1916	909,425	376,891	1,286,316
1912	2,005,869	1,357,425	3,363,294
1908	1,879,268	870,612	2,749,880
1904	1,506,137	892,934	2,399,071

TABLE III

DAILY CATCH OF SOCKEYE, 1948-1952-1956-1960 FROM UNITED STATES CONVENTION WATERS

Date	JULY				AUGUST				SEPTEMBER			
	1948	1952	1956	1960	1948	1952	1956	1960	1948	1952	1956	1960
1		5,011			118,062	40,805	59,168	117,041	2,707	711		3,777
2		8,640	4,286		100,423		41,245	54,285	391	597		
3		7,943	3,885		97,469			45,840	1,150	432	1,418	
4		4,857	2,365		67,360	32,815		45,845		434	606	
5			1,038		60,695	25,891			1,297	140	500	1,784
6					68,962	16,978	141,861		3,799		454	1,524
7		14,008				18,488	98,859	194,605	1,692	722	146	1,295
8		9,369			115,925	13,920		181,344	404	201		614
9		8,090	2,429		101,997			126,087	333	573		
10		6,796	1,803		38,878			96,389	134	636	78	
11		4,187	2,189		17,288	6,865		65,882		557	58	
12			1,423			7,055		42,416	212	410	33	
13						2,697	24,347		205		119	
14		9,159				2,712	21,450		65	434	100	
15		10,812				2,831	12,509		15	299		
16		13,794	4,677				9,102		42	272		
17		16,876	8,146						140	193	43	
18	1,900	11,786	12,101	6,574		4,096				202	146	
19	2,469		15,053	6,329		3,143			233	151	49	50
20	6,345			6,823		2,730	13,151		88		23	130
21	8,602	90,696		7,550		967	8,831		20	117	37	56
22	5,657	32,619				612	4,955		24	135		38
23	5,142	34,320	78,518				2,252		11	85		
24		110,491	59,695						16	48	3	
25	17,524	134,294	39,052	78,450		220				47	3	
26	22,251		31,635	38,405		720			16	34	4	
27	23,441			33,335		1,167	651		22		5	
28	42,887	128,339		32,087		1,310	727		429	20	5	
29	69,529	100,767				931	389	3,587	811	20		
30	78,843	96,565	113,200				524	2,064	319	31		
31		56,664	70,572			654		3,024				
Totals	284,590	916,083	452,067	209,553	787,059	187,607	440,021	978,409	14,575	7,501	3,830	9,268
Troll and outside seine	37			142	9	2	3,816	851		17	34	
Monthly Totals	284,627	916,083	452,067	209,695	787,068	187,609	443,837	979,260	14,575	7,518	3,864	9,268
June, Oct. & Nov. Totals									2,821	2,265	7,104	746
Season Totals									1,089,091	1,113,475	906,872	1,198,969

CLOSED

Table IV

DAILY CATCH OF SOCKEYE, 1948-1952-1956-1960 FROM CANADIAN CONVENTION WATERS

Date	JULY				AUGUST				SEPTEMBER			
	1948	1952	1956	1960	1948	1952	1956	1960	1948	1952	1956	1960
1		10,225				11,392	54,068		2,149	13,562		760
2		8,532			62,634		25,441	47,301	2,757	5,599		
3		12,241	8,554		54,876			194,327	15	3,343		
4		1,184	4,731	7,347	58,060					6,475	4,403	
5			6,501	6,170	74,788	108,955				10	1,448	491
6				4,544	18,427	36,472			2,830			222
7		13,476				23,048			1,028			71
8		10,009				911	154,050	108,471	388	8		
9		8,732			101,965		78,176	208,985	385	7		
10		9,000	4,773		62,668			87,843	11	7		
11		1,317	2,782	8,358	39,454	38,878		34,455		11	584	
12			2,474	4,686	35,812	12,321				12	260	1,402
13				4,341	1,645	11,433			1,927			464
14		13,063				9,381	53,080		1,437			32
15		8,249				110	15,765		1,663	28		
16		13,221			30,941			96,388	1,789	28		
17		22,896	7,570		24,102			45,676	3	27		
18		11,729	7,067	11,420	13,438	17,786		56,111		17		
19	1,281		9,459	14,424	11,031	9,714				17	6,916	
20	1,281			24,164	97	6,218			3,117		2,753	
21	1,283	5,299				5,443	17,444		931			
22	637	5,299				67	5,804	53,752	703			
23		5,299			15,618			17,274	859			
24		39,207	57,027		8,322						1,383	
25		48,841	22,609	84,939	8,302	21,489				1	193	
26	2,912		29,237	51,124	7,525	9,583				1	94	
27	2,967			60,451	84	6,535			5,523		29	
28	16,769	211,103				5,162	6,907		3,130			614
29	11,248	109,483				13	2,863	2,292	2,216	2		185
30	23,567	79,096			2,241			806	1,650	2		
31		120,159	181,981		1,623			885				
Totals	61,945	767,660	344,765	281,968	633,653	334,911	413,598	954,566	34,511	29,157	18,063	4,241
Troll and outside seine			91	670		811	111,659	2,092			57	109
Spring salmon gill nets								253			220	268
Monthly Totals	61,945	767,660	344,856	282,638	633,653	335,722	525,257	956,911	34,511	29,157	18,340	4,618
June, Oct. & Nov. Totals									22,582	21,844	6,383	11,028
Season Totals									752,691	1,154,383	894,836	1,255,195

CLOSED

CLOSED

TABLE V
THE INDIAN CATCHES OF SOCKEYE SALMON BY DISTRICTS AND THE VARIOUS AREAS WITHIN THESE DISTRICTS, 1956, 1960

	1956		1960	
District and Area	*Catch*	*No. of Fishermen*	*Catch*	*No. of Fishermen*
HARRISON-BIRKENHEAD				
Skookumchuck and Douglas	1,685	11+	1,142	12
Birkenhead River and area adjacent	6,953	22	5,580	30
TOTALS	8,638	33+	6,722	42
LOWER FRASER				
Laidlaw to Vedder River	3,045		9,852	
Seabird Island and adjacent area	1,855		7,123	
Katz and Ruby Creek	710		2,050	
TOTALS	5,610		19,025	268
CANYON				
Union and American Bars	510		2,181	
Yale	1,950		8,336	
Spuzzum	360		1,538	
Boston Bar	480		660	
Boothroyd	1,150		2,040	
Cisco	1,800		3,300	
TOTALS	6,250		18,055	99
LYTTON-LILLOOET	4,585	47*	3,600	35
BRIDGE RIVER RAPIDS				
Lillooet	2,958	35	3,000	67
Rapids	7,103	49	5,400	68
Pavillion	2,854	18	4,000	10
TOTALS	12,915	102*	12,400	145
CHILCOTIN				
Farwell Canyon	1,833		3,006	
Hances Canyon	1,293		3,533	
Alexis Creek	3,423		4,134	
Siwash Bridge	5,161		3,945	
Keighley Holes	—		2,756	
TOTALS	11,710	64*	17,374	73
UPPER FRASER				
Shelley	85		68	
Alkali and Canoe Creek	250		250	
Chimney Creek	743		2,585	
Soda Creek	110		225	
Alexandria	45		165	
Quesnel	72		375	
TOTALS	1,305	79*	3,668	84
NECHAKO				
Nautley Reserve	2,353	10	1,009	10
Stella Reserve	2,154	11	1,230	9
TOTALS	4,507	21	2,239	19
STUART				
Fort St. James	1,916	32	937	21
Tachie Reserve and Pinchi	648	23	726	20
Trembleur Lake and Takla Lake	—		—	
TOTALS	2,564	55	1,663	41
THOMPSON				
Main Thompson	3,419		900	87
North Thompson	310		325	20
South Thompson	375		485	47
TOTALS	4,104		1,710	154
GRAND TOTALS	62,188		86,456	

* Number of permits issued to Indians in district.
The Indian catch statistics detailed above are obtained principally from the Protection Officers of the Canadian Department of Fisheries. These officers control the taking of sockeye for food by the Indian population residing throughout the Fraser River watershed.

TABLE VI

SUMMARY OF THE SOCKEYE ESCAPEMENT TO THE FRASER RIVER SPAWNING AREAS, 1948, 1952, 1956, 1960

District and Streams	1960 Period of Peak Spawning	Estimated Number of Sockeye				Jacks	Sex Ratio	
		1948	1952	1956	1960		Males 4-5 yr.	Female 4-5 yr
LOWER FRASER								
Cultus Lake	Nov. 16-19	13,086	18,910	14,133	17,689	49	7,520	10,12
Upper Pitt River	Sept. 9-13	53,000	48,887	32,258	24,511	0	11,612	12,89
Widgeon Slough	Nov. 2-6	——	1,648	1,000	400	0	100	30
HARRISON								
Bear Creek	Sept. 27-Oct. 3	——	——	——	189	0	79	11
Big Silver Creek	Sept. 15-25	12,000	6,031	6,187	4,522	35	1,893	2,59
Harrison River		26,000	25,794	3,184	17,279	70	10,062	7,14
Weaver Creek	Oct. 18-19	20,000	33,983	8,472	7,042	9	2,738	4,29
LILLOOET								
Birkenhead River	Sept. 24-26	120,000	79,082	57,899	38,916	2,987	14,905	21,02
SETON-ANDERSON								
Gates Creek	Aug. 27-28	——	6,883	9,059	5,449	36	2,284	3,12
SOUTH THOMPSON								
Seymour River	Aug. 25-Sept. 2	4,000	6,785	2,684	3,047	146	1,039	1,86
Lower Adams River	Oct. 17-19	12,600	8,692	7,512	2,152	8	608	1,53
Little River	——	2,400	1,964	661	66	0	22	4
Scotch Creek	——	50	357	163	11	11	0	
South Thompson River		100	200	0	0	0	0	
Upper Adams River	——	0	0	0	Present*	——	——	——
Momich River		——	——	——	1,000*	——	450	55
NORTH THOMPSON								
Raft River	Aug. 27-29	10,500	15,819	9,582	5,553	40	2,684	2,82
Barriere River	Sept. 6-12	——	——	——	23*	0	11	1
CHILCOTIN								
Chilko River	Sept. 26-30	670,000	489,473	647,479	420,746	53	174,715	245,97
Taseko Lake	Aug. 31-Sept. 5	Present	3,647	1,995	2,524	0	910	1,61
QUESNEL								
Horsefly River	Sept. 5-7, Sept. 14-18	50	7,013	2,944	3,087	2,748	150	18
Mitchell River	——	——	——	14	5	5	0	
Little Horsefly River	Sept. 21-28, Oct. 8-16	——	——	——	23	12	5	
NECHAKO								
Endako River	——	0	146	18	0	0	0	
Nadina River	Aug. 19-22, Sept. 22-24	30	1,677	1,311	1,723	173	535	1,01
Nithi River	Aug. 26-27	1	45	36	31	3	13	1
Ormonde Creek	Aug. 22-24	150	996	331	158	0	62	9
Stellako River	Sept. 24-28	16,000	40,462	38,459	38,884	4	15,589	23,29
STUART								
Early Runs								
Driftwood River	Aug. 22-26	——	38	50	34	6	13	1
Forfar Creek	Aug. 6-9	1,500	6,975	5,497	1,755	22	744	98
Gluske Creek	Aug. 6-9	1,500	5,911	4,619	2,138	10	895	1,23
Kynoch Creek	Aug. 6-9	7,500	13,439	9,535	4,154	23	1,727	2,40
Narrows Creek	Aug. 7-10	0	1,453	697	598	34	249	31
Rossette Creek	Aug. 4-9	1,500	3,575	3,863	4,558	9	1,577	2,97
Shale Creek	Aug. 10-14	0	414	185	139	2	62	7
Misc. Streams	——	——	1,775	711	1,196	19	529	64
Late Runs								
Kazchek Creek	Sept. 16-20	80	295	223	5	0	2	
Middle River	Sept. 16-20	200	476	500	1,056	171	410	47
Tachie River	Sept. 22-30	20	364	600	1,687	159	708	82
Sakeniche River	——	——	——	131	0	0	0	
NORTHEAST								
Upper Bowron River	——	25,218	18,672	6,996	7,620	0	3,649	3,97
TOTALS		997,485	851,881	878,988	619,970	6,844	258,551	354,57

* Newly established run.

TABLE VII

DAILY CATCH OF SOCKEYE, 1945-1949-1953-1957 FROM UNITED STATES CONVENTION WATERS

Date	JULY				AUGUST				SEPTEMBER			
	1945	1949	1953	1957	1945	1949	1953	1957	1945	1949	1953	1957
1	2		24,386	10,165	45,429	112,059				6,451	1,307	
2			32,371	11,833	28,079	66,263			699	4,114	1,050	7,288
3	187		39,812	13,977	12,686	66,061			157		1,027	25,515
4	86						53,277		318	4,205	2,944	19,653
5	163				21,428	43,876	50,531	247,511	886	3,630		
6	324		48,620		13,760		24,955	135,265	577	2,195	1,104	
7			69,419		10,841		24,647		270	1,396	780	
8	2,431		54,566	42,804	11,921	70,218				897	757	
9	4,439		57,159	57,639	7,251	52,151			1,035	564	892	1,852
10	3,919		31,169	23,464	6,220	31,270	35,819		635		509	3,333
11	2,255	CLOSED				27,071	31,244		448	452	604	4,583
12	1,336				5,331	29,923	21,641	169,312	34	311		1,451
13	790		15,334		4,345		18,034	121,946	168	216	423	5
14			26,643		2,392		16,328	71,364	39	47	331	
15	3,332		33,817	39,662	3,446	31,651				28	339	
16	4,528		35,230	37,687	3,288	21,509			23	22	228	109
17	7,689		21,961	33,138	2,591	22,065	18,173		65		637	610
18	13,112					21,059	14,384		42	92	17	170
19	10,436				8,210	17,864	16,544	49,619	8	119		
20	2,484				8,018		8,017	45,223	9	94	60	
21			175,068		6,808	19,173	14,939	28,689	6	41	22	
22	40,313		109,925	95,124	6,360	15,040		27,606		16	5	
23	54,969		165,742	78,735	2,706	16,475			2	28	8	24
24	31,730			52,762	1,736	12,852	14,521		4		9	29
25	62,722	3,916				9,725	8,796		0	23		8
26	33,934	43,196			1,916	12,924	6,949	22,237	2	25		
27	30,155	116,793	213,804		1,603		7,891	16,538	0	24	1	
28		82,812	147,109		1,624	8,262	6,569	12,724		6		
29	30,862	44,979	77,777	63,287	1,021	6,052		7,420		1		
30	64,272		90,768	61,061	653	5,768	2,574		0		11	
31	69,320			46,297	2,136	8,678	2,860					
Totals	475,790	291,696	1,470,680	667,635	221,799	727,989	398,693	955,454	5,427	24,997	13,065	64,630
Troll and outside seine	1,253		31,396		2,175	11,966	38,496			144	60	
Monthly Totals	477,043	291,696	1,502,076	667,635	223,974	739,955	437,189	955,454	5,427	25,141	13,125	64,630
June, Oct. & Nov. Totals									20		80,047	1,546
Season Totals									706,464	1,056,792	2,032,437	1,689,265

Table VIII

DAILY CATCH OF SOCKEYE, 1945-1949-1953-1957 FROM CANADIAN CONVENTION WATERS

Date	JULY				AUGUST				SEPTEMBER			
	1945	1949	1953	1957	1945	1949	1953	1957	1945	1949	1953	1957
1			33,417	19	59,066	154,935		36,393		4,683	4,397	
2	5,973		36,323	274	52,659	83,461				772	4,038	9,419
3	4,429		2,287	1,658	41,900	68,945	91,326				4,797	4,956
4	8,109			1,157		63,618	54,086		7,168		246	3,328
5	14,153					50,283	48,611	83,204	5,005	5,622		1,920
6	10,252		72,602		55,085		38,493	138,428	2,010	2,413		1,619
7			36,926		16,660		6,820	52,297	1,372	1,704	6,321	
8			22,165	68	16,845	73,872			2	1,302	5,136	
9	11,869		27,665		12,530	35,418				177	6,556	67
10	9,223		2,500	4,529	10,395	24,834	20,889				7,067	11,153
11	8,130			67		36,180	60,670		8,740		89	6,060
12	8,415					400	37,370	37,115	5,635	3,811		3,340
13	7,451		28,227		13,852		36,956	104,138	5,891	3,558		1,833
14			16,936		6,845		19,232	81,215	5,840	5,437	32	
15			21,295		5,884	32,850		85,221	3	4,373	14	
16	20,257		24,817	31,184	3,705	16,564				2,934	14,700	2,753
17	12,869		4,809	17,143	490	15,140	31,843				8,126	4,224
18	17,045			17,281		15,358	13,370		1,125		2	2,102
19	16,599	2,043				1,419	10,734	24,722	409	2,084		763
20	14,726	2,102	93,156		14,617		13,397	62,386	333	1,709		924
21		1,443	128,664		9,556		7,066	40,463	461	1,689		
22		1,440	112,022	72,300	7,126	15,697		31,909		1,321		
23	41,465		87,223	82,253	5,379	7,780						
24	31,041			53,025	95	6,792	10,945					1
25	39,986	38,191		20,679		6,699	4,916		6,227			
26	48,675	28,963				290	2,929	25,088	2,836	6,139		
27	36,153	49,822	40,629		11,212		4,860	12,623	2,069	1,544		
28		64,646	249,362		3,259		1,024	9,799	1,308	455		
29		4,425	130,898	13,254	4,076	12,778		1,836		1,266		
30	109,052		140,486	83,664	2,336	4,585						
31	75,422		7,932	75,599	21	4,189	6,869					
Totals	551,294	193,075	1,320,341	474,154	353,593	732,087	522,406	826,837	56,434	52,993	61,521	54,462
Troll and outside seine		1,995		662		22,716	474	1,001		114		37
Spring salmon gill nets											212	
Monthly Totals	551,294	195,070	1,320,341	474,816	353,593	754,803	522,880	827,838	56,434	53,107	61,733	54,499
June, Oct. & Nov. Totals									8,123	17,819	87,389	3,607
Season Totals									969,444	1,020,799	1,992,343	1,360,760

Strike Relief Fishing

CLOSED

CLOSED

TABLE IX
SUMMARY OF THE SOCKEYE ESCAPEMENT TO THE FRASER RIVER SPAWNING AREAS, 1945, 1949, 1953, 1957

District and Streams	1957 Period of Peak Spawning	Estimated Number of Sockeye 1945	1949	1953	1957
LOWER FRASER					
Cultus Lake	Nov. 18-26	9,231	9,301	13,000	20,647
Upper Pitt River	Sept. 12-18	—	9,500	18,693	12,338
Pitt Lake	—	—	—	350	—
Widgeon Slough	Nov. 1-12	1,200	650	1,518	1,200
HARRISON					
Big Silver Creek	Sept. 15-20	2,000	2,100	432	389
Harrison River	Nov. 8-12	16,060	8,000	21,328	3,812
Weaver Creek	Oct. 26-29	12,944	12,520	9,530	20,887
Misc. Streams	—	199	310	86	—
LILLOOET					
Birkenhead River	Sept. 25-28	96,664	74,300	53,111	24,168
SETON-ANDERSON					
Gates Creek	Aug. 28-31	—	—	78	1,112
Portage Creek	Oct. 30-Nov. 1	—	—	200	470
SOUTH THOMPSON					
Seymour River	Aug. 25-28, Aug. 30-Sept. 3	150	10,772	5,947	14,095
Scotch Creek	Aug. 29-Sept. 2	75	1,000	1,364	2,354
Lower Adams River	Oct. 27-30	59,725	11,700	177,000	257,614
Little River	Oct. 30-Nov. 5	7,750	9,615	32,118	34,964
South Thompson River	Oct. 30-Nov. 5	—	5	12,614	14,645
NORTH THOMPSON					
Raft River	Aug. 30-Sept. 2	3,300	5,900	8,242	7,264
Barriere River	Sept. 8	—	—	—	38
CHILCOTIN					
Chilko River	Sept. 24-26	192,884	59,000	197,660	140,765
Taseko Lake	Aug. 28-Sept. 1	—	100	4,422	3,667
QUESNEL					
Horsefly River	Sept. 2-5	3,000	20,000	105,218	226,378
Mitchell River	Sept. 10	—	350	2,344	2,677
NECHAKO					
Endako River	Aug. 30	80	1,100	605	110
Nadina River (early)	Aug. 24-26	300	21,600	38,574	30,000
Nadina River (late)	Sept. 20-23				29,146
Nithi River	Aug. 31-Sept. 2	500	1,400	1,208	1,186
Ormonde Creek	Aug. 31-Sept. 2	400	2,500	956	450
Stellako River	Sept. 28-Oct. 1	20,826	104,800	45,057	38,922
Uncha Creek	—	0	0	209	—
STUART RIVER					
Early Runs					
Ankwil Creek	Aug. 3-10	0	750	5,913	8,285
Bivouac Creek	Aug. 2-6	0	12,900	8,994	9,464
Driftwood River	Aug. 10-18	—	450	8,655	45,567
Dust Creek	Aug. 4-8	4	7,800	16,891	14,827
Felix Creek	Aug. 3-7	—	—	805	7,081
15 Mile Creek	Aug. 3-10	0	200	794	511
5 Mile Creek	Aug. 3-10	0	600	2,632	3,821
Forfar Creek	Aug. 3-7	7,081	80,500	18,054	17,975
Forsythe Creek	Aug. 3-10	0	1,200	4,500	6,385
Frypan Creek	Aug. 3-10	0	750	4,566	3,890
Gluske Creek	Aug. 3-8	2,783	106,000	16,074	21,899
Kynoch Creek	Aug. 3-7	9,304	185,400	16,676	13,473
Leo Creek	Aug. 3-7	0	1,700	6,361	10,620
Narrows Creek	Aug. 3-7	109	20,700	20,604	16,184
Paula Creek	Aug. 3-7	—	—	1,406	7,918
Rossette Creek	Aug. 3-6	6,808	152,900	6,355	7,087
Sakeniche River	Aug. 3-7	0	150	3,382	6,340
Sandpoint Creek	Aug. 2-6	—	—	2,092	20,914
Shale Creek	Aug. 3-7	250	3,000	3,809	1,606
25 Mile Creek	Aug. 4-8	0	3,300	2,167	724
Misc. Streams	Aug. 3-7	2	1,112	3,392	10,462
Late Runs					
Kazchek Creek	Sept. 16-18	952	1,500	7,903	19,582
Kuzkwa River	Sept. 15-17	—	—	3,686	50,006
Middle River	Sept. 16-18	22,804	126,400	235,572	332,098
Pinchi Creek	Sept. 21-26	—	—	72	6,390
Sakeniche River	Sept. 19-23	—	—	104	592
Tachie River	Sept. 19-23	751	20,000	107,506	118,252
NORTHEAST					
Upper Bowron River	—	4,094	22,283	13,517	12,069
TOTALS		482,230	1,116,118	1,274,346	1,663,320

Table X

DAILY CATCH OF PINKS, 1953-1955-1957-1959 FROM UNITED STATES CONVENTION WATERS

Date	JULY				AUGUST				SEPTEMBER			
	1953	1955	1957	1959	1953	1955	1957	1959	1953	1955	1957	1959
1	2		1			9,370			210,985	144,389		187,274
2	1					16,341			267,777		308,214	157,077
3	2					10,279		6,110	188,793		344,634	
4		6			10,889			10,378	109,755	154,128	198,795	
5		17			14,070		17,545	13,181		113,207		
6	71	10			12,244		12,487	12,221	212,407	167,703		
7	6	4			14,098	10,114		13,229	209,440	137,636		108,145
8	23			CLOSED		24,948		9,036	205,765	55,612		153,233
9	8		7			19,202			174,981		143,732	133,600
10	35		1		23,873	16,197		10,105	158,067		82,101	132,028
11		36			21,869	10,225		16,642	107,144	141,602	115,338	
12		106			25,948		24,436	17,634		131,375	56,951	
13	26	111			29,059		43,316	19,633	138,288	24,818	786	
14	85	122			24,516	20,165	57,329		106,416	76,532		
15	116		108			23,491			72,293	38,369		41,645
16	454		235			26,193			78,636		40,133	30,919
17	154		164		56,867	47,162		57,658	75,473		50,380	14,021
18		583			56,938	38,138		41,664	16,501	149,735	35,730	
19		736			72,235	2,488	99,644	36,950		104,360	146	
20		658		1,063	40,859		89,534		73,159	81,676	49	
21	1,190	515		1,533	83,825	66,618	80,747		36,796	68,999		
22	611		1,423	1,127		65,570	110,833		16,013	66,773		8,427
23	1,273		1,371			136,472		10,524	9,655		18,459	8,204
24			1,193		170,566	122,729		316,210	7,363		12,369	4,195
25		1,737			151,858	91,280		232,534	3,681	102,199	5,890	1,134
26		890			169,118		228,828	59,823		29,277		
27	4,264	1,785		3,545	156,070		189,603	125,179	1,015	43,543		
28	5,356	1,827		5,506	164,644	228,497	133,673		532	46,725		
29	3,586		1,837	5,114		135,610	97,861		732	15,696		3,790
30	5,675		3,386	4,276	196,160	162,752			157			2,106
31			2,848		310,263	161,889		232,046				2,252
Totals	22,938	9,113	12,574	22,164	1,805,969	1,445,730	1,185,836	1,240,757	2,481,824	1,894,354	1,413,707	988,050
Troll and outside seine	13,764	4,830	42,145	40,259	400,315	778,434	102,386	126,019	225,291	540,117	10,748	6,545
Monthly Totals	36,702	13,973	54,719	62,423	2,206,284	2,224,164	1,288,222	1,366,776	2,707,115	2,434,471	1,424,455	994,595
June, Oct. & Nov. Totals									1,328	13,376	9,970	3,741
Season Totals									4,951,429	4,685,984	2,777,366	2,427,535

Table XI

DAILY CATCH OF PINKS, 1953-1955-1957-1959 FROM CANADIAN CONVENTION WATERS

Date	JULY				AUGUST				SEPTEMBER			
	1953	1955	1957	1959	1953	1955	1957	1959	1953	1955	1957	1959
1	185		2			7,169	343		138,491	137,320		117,313
2	79		1			6,943			203,070	67,163	192,149	89,335
3	9		1		6,509	16,178			202,614		180,181	99,848
4		17	6		15,459	11,082		13	175,817		147,730	19,653
5		5	7		17,664		20,779			299,702	91,813	
6	91	6			15,838		41,304			175,474	58,796	95,733
7	165	13			7,808		43,086		292,202	182,104		52,704
8	78		6				162		159,485	136,765		92,362
9	193		6			32,507	163		252,505	117,875	20,398	131,918
10	92		6		36,025	45,148		25,687	269,828		113,427	88,337
11		51	10		45,962	52,906		24,563	44,210		96,826	9,774
12		115	10		30,426	40,857	88,365	24,718		94,543	57,295	
13	224	93			58,612		53,273	34,625		228,496	40,518	
14	282	181			87,204		116,580		60,025	191,906		29,041
15	770		22			67,273	79,958		63,476	31,326		57,720
16	1,105		33			72,500			132,282	4,719	44,764	45,086
17	533		55		54,173	76,519		40,111	82,681		70,693	37,960
18		818	101		38,864	63,697		29,604	452		33,112	1,169
19		522	19		68,481	94,825	79,913	1,749		19,245	42,847	
20	1,244	1,020		1,603	131,155		77,578			10,069	66,096	
21	2,004	1,494		1,807	150,158		91,077		339	4,989		20,122
22	9,641		3,091	2,880		154,777	110,547		336	4,543		17,566
23	36,551		7,849			163,202		201,421	330	3,112	1,455	36,721
24			5,078		138,875	212,995		225,659	75		1,628	22,104
25		4,684	206		164,030	211,931		146,148	64		1,498	
26		6,145			137,887	267,348	113,470	98,483		1,046	226	
27	5,941	3,838			216,145		84,368			671	139	
28	9,734	3,097			257,964		114,618		21	1,060		93
29	6,987		2,078			251,150	164,983		21	240		202
30	9,094		8,170			238,032			21	373	10	63
31	4,631		14,928		183,237	170,565		123,443				
Totals	89,633	22,099	41,685	6,290	1,862,476	2,257,604	1,280,567	976,224	2,078,345	1,712,741	1,261,601	1,064,824
Troll and outside seine	7,273	2,216	3,398	27,542	40,415	46,117	30,460	179,795	26,707	12,052	4,788	44,467
8" Gill Nets									9,875	6,888		482
Monthly Totals	96,906	24,315	45,083	33,832	1,902,891	2,303,721	1,311,027	1,156,019	2,114,927	1,731,681	1,266,389	1,109,773
June, Oct. & Nov. Totals									27,393	69,346	12,221	13,282
Season Totals									4,142,117	4,129,063	2,634,720	2,312,906

CLOSED

STRIKE JULY 26-AUGUST 9

TABLE XII
SUMMARY OF THE PINK SALMON ESCAPEMENT TO THE FRASER RIVER SPAWNING AREAS

District and Streams	*Period of Peak Spawning*	*Estimated Number of Pink Salmon* 1957	1959
EARLY RUNS			
LOWER FRASER			
Main Fraser	Sept. 25-Oct. 5	1,263,651	733,933
HARRISON			
Chehalis	Oct. 12-18	9,336	6,729
FRASER CANYON			
Coquihalla River	Oct. 3-8	4,433	16,088
Jones Creek	Oct. 1-5	1,493	2,604
Lorenzetti Creek	Oct. 3-8	6	991
Silver Creek	Oct. 4-8	549	1,914
Hunter Creek	Oct. 4-9	13	234
American Creek	Oct. 5-10	4	790
Spuzzum Creek	Oct. 1-5	1,076	2,111
Nahatlatch River	Oct. 5-10	208	216
Anderson Creek	Oct. 6-10	824	567
Stein River	Sept. 30-Oct. 4	185	62
Churn Creek	——	8	0
Texas Creek	Oct. 8-12	0	195
Popkum Creek	Oct. 1-5	0	57
Flood Creek	Oct. 1-5	0	8
Yale Creek	Oct. 1-5	0	510
Emory Creek	Oct. 3-8	0	728
Stoyoma Creek	Oct. 5-8	0	42
Kawkawa Creek	Oct. 10-15	317	1,279
Ruby Creek	Sept. 28-Oct. 5	0	528
SETON-ANDERSON			
Seton Creek	Oct. 10-18	58,810	14,887
Portage Creek	Oct. 15-18	1,867	52
Bridge River	Oct. 15-20	0	1,201
Yalakom River	Sept. 28-Oct. 3	0	13
THOMPSON			
Thompson River	Oct. 10-20	266,329	86,342
Nicola River	Oct. 1-5	1,560	806
Bonaparte River	Oct. 18-22	653	3
Deadman River	——	564	0
Nicoamen River	Oct. 2-4	0	73
TOTAL		1,611,886	872,963
LATE RUNS			
LOWER FRASER			
Stave River	Nov. 1-5	6,500	1,383
Whonnock Creek	Oct. 20-25	549	57
Suicide Creek	——	2	0
Silverdale Creek	Oct. 13-18	52	68
Kanaka Creek	Oct. 18-23	153	18
South Alouette River	——	8	0
North Alouette River	——	8	0
Silver Creek (Pitt Lake)	——	239	0
Coquitlam River	——	6	0
HARRISON			
Harrison River	Oct. 20-27	585,798	110,311
Weaver Creek	Oct. 20-27	346	87
CHILLIWACK-VEDDER			
Chilliwack-Vedder River	Oct. 20-Nov. 1	212,334	91,517
Sweltzer Creek	Oct. 20-Nov. 1	6,874	751
Little Chilliwack Creek	——	68	0
Brown Creek	——	44	0
Slesse Creek	Oct. 20-Nov. 1	——	317
Middle Creek	Oct. 15-25	——	528
TOTAL		812,981	205,037
GRAND TOTAL		2,424,867	1,078,000

EVERGREEN PRESS LIMITED, 1070 S.E. MARINE DR., VANCOUVER, B. C.